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Acid Rain Monitoring Project Says

ACID RAIN DAMAGE WORSE THAN EVER

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Acid Neutralizing Capacity dropped 30% in Massachusetts streams and 35% in lakes this April. ANC is a measure of the amount of acid a water body can absorb before severe biological damage occurs. "Overall, We've never seen the protective level of acid neutralizing capacity this low," says Acid Rain Monitoring Project Director Paul J. Godfrey at UMass-Amherst.

Three hundred volunteers collected samples from 750 lakes and streams across Massachusetts for the Acid Rain Monitoring (ARM) Project and found more acid rain damage than ever observed in ten years of monitoring. Godfrey said, "The results were a shock. Conditions over the past 8 years have improved slightly until now. The modest reductions in emissions enacted by New England states in advance of the Federal 1990 Clean Air Act seem to have helped. But unusual winters with little snow pack and frequent melting throughout the winter may have masked the real potential for damage. Although acid deposition falls year-round, in winter, the acidity is stored in the snow pack until spring or an earlier thaw. A typical New England winter such as we've had this past year stores the winter's acidity in the snow pack until it melts in those first warm days of spring. If there is little snow or frequent melting in the winter, the acid shock is distributed over several months. But this year, the shock was concentrated in late March." The ARM Project, which samples in mid-April, saw the full effects of a more typical New England winter on the lakes and streams this year.

ARM has sampled 750 lakes and streams quarterly since 1985, and this sample represents a cross section of Massachusetts water bodies, not just a few "worst cases." In addition to acids, 21 other factors such as Lead, Sulfates, etc. are analyzed for each locality. Despite some variability between years, the trend has

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been for slight improvement since 1984. According to Godfrey, "This spring the bottom fell out." The pH of lakes and streams dropped lower than ever observed in the study. The lower the pH, the more acidity and biological damage. For most counties, pH is still sufficiently high to protect most aquatic species, but in Barnstable and Bristol county, pH has dropped to levels known to cause the elimination of some species.

The most severe losses of ANC were observed in Essex, Norfolk, Middlesex, Hampden and southern Worcester Counties. Plymouth and Bristol County lost enough ANC to leave the average lake and stream very close to critically endangered. In northern Worcester county, the situation has been bad for years. Lakes and streams that had gradually improved from the "endangered" category to the more secure "highly sensitive" category have lost those gains and more. The typical lake and stream is now in critical condition, nearly acidified.

Compared to conditions observed in the first years of the study (1983-85), an additional 4% have lost all acid neutralizing capacity and become acidic. Another 11% have lost sufficient ANC to place them in the critical category, on the verge of acidification. Overall 38% of the lakes and streams surveyed have lost sufficient ANC to be categorized as more sensitive now than ten years ago.

These findings dash hopes that the acid rain problem has ended. According to the US Environmental Protection Agency's State of the Science report, acid deposition-causing emissions in 1990 were down 25-28% compared to 1981. With the first stage of the Clean Air Act to be implemented by 1995, the reduction will total 50%. "The return of the typical New England winter suggests that our lakes and streams may not be adequately protected from further damage," Godfrey noted.

"The fact is, it looks like we will never know the actual trend," Godfrey added. "The Acid Rain Monitoring Project has collected its last samples." Funded since 1983 by the state and for the last 4 years by the Massachusetts Division of Fisheries & Wildlife, the project has been cancelled as of June. No other program, state or federal, replaces the ARM Project monitoring these lakes and streams. If a lake or stream died and no one was there to monitor.....

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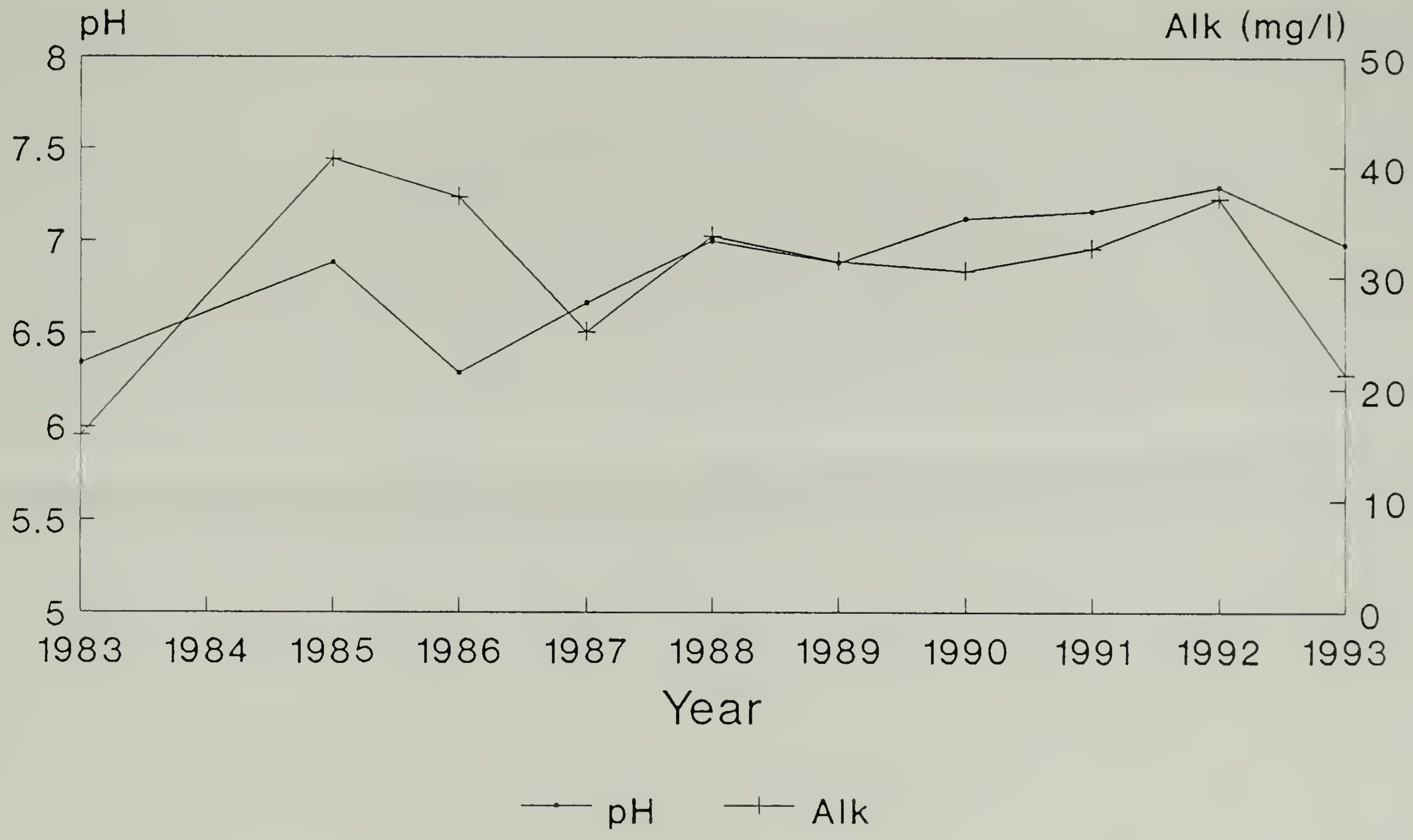
April Trends in pH and Alkalinity

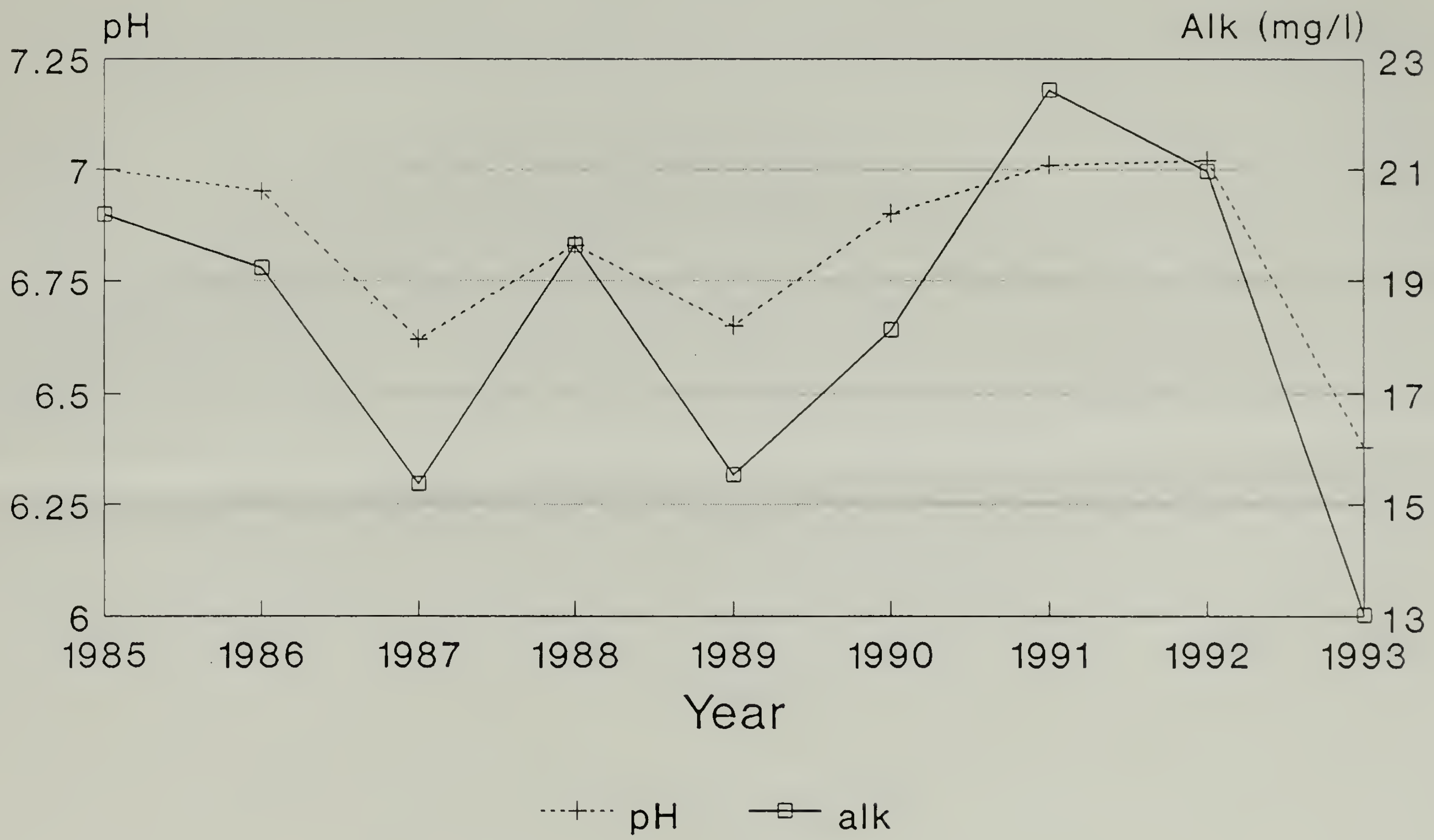
Berkshire County



Average for random sites

April Trends in pH and Alkalinity

Middlesex County



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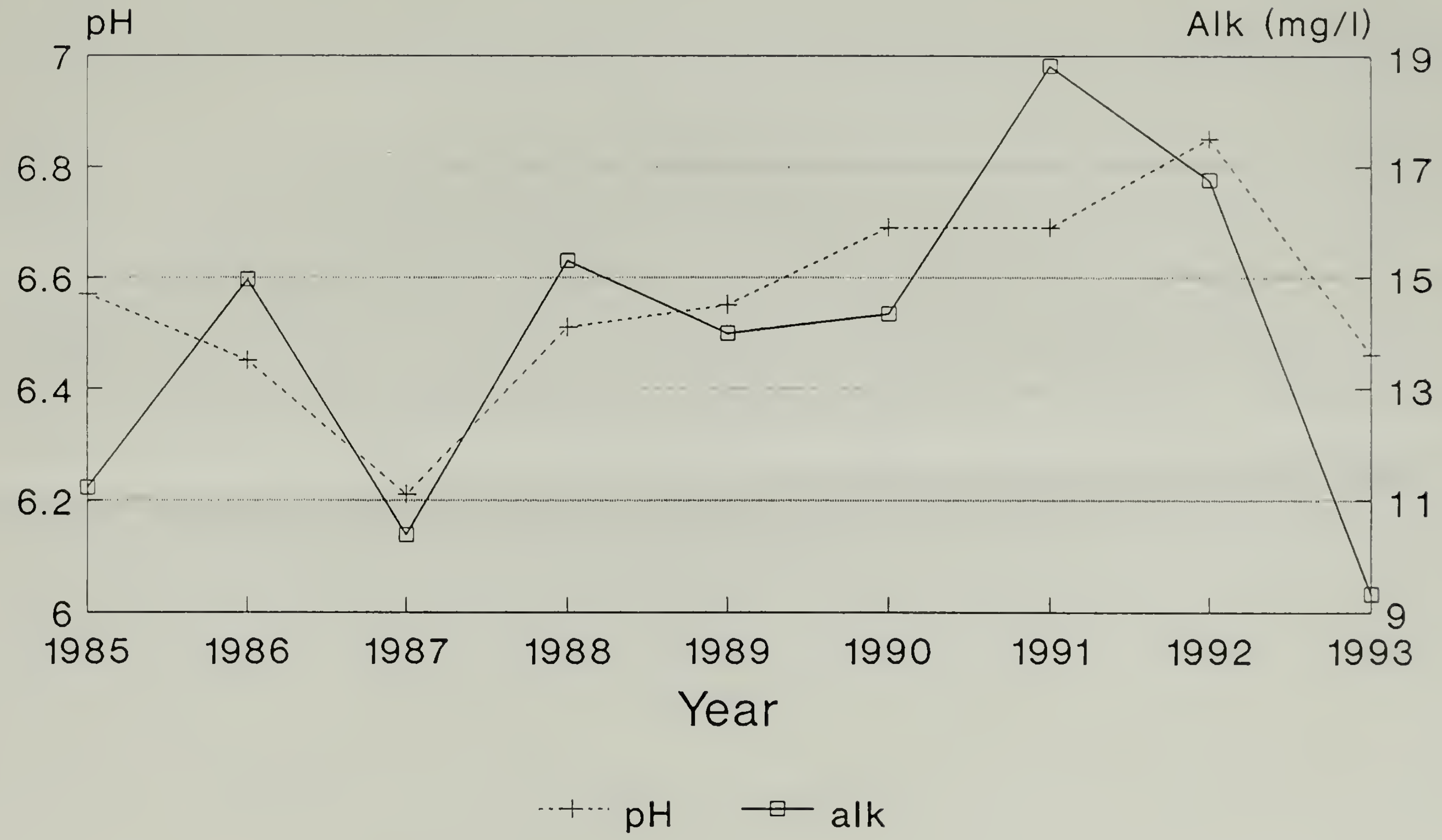
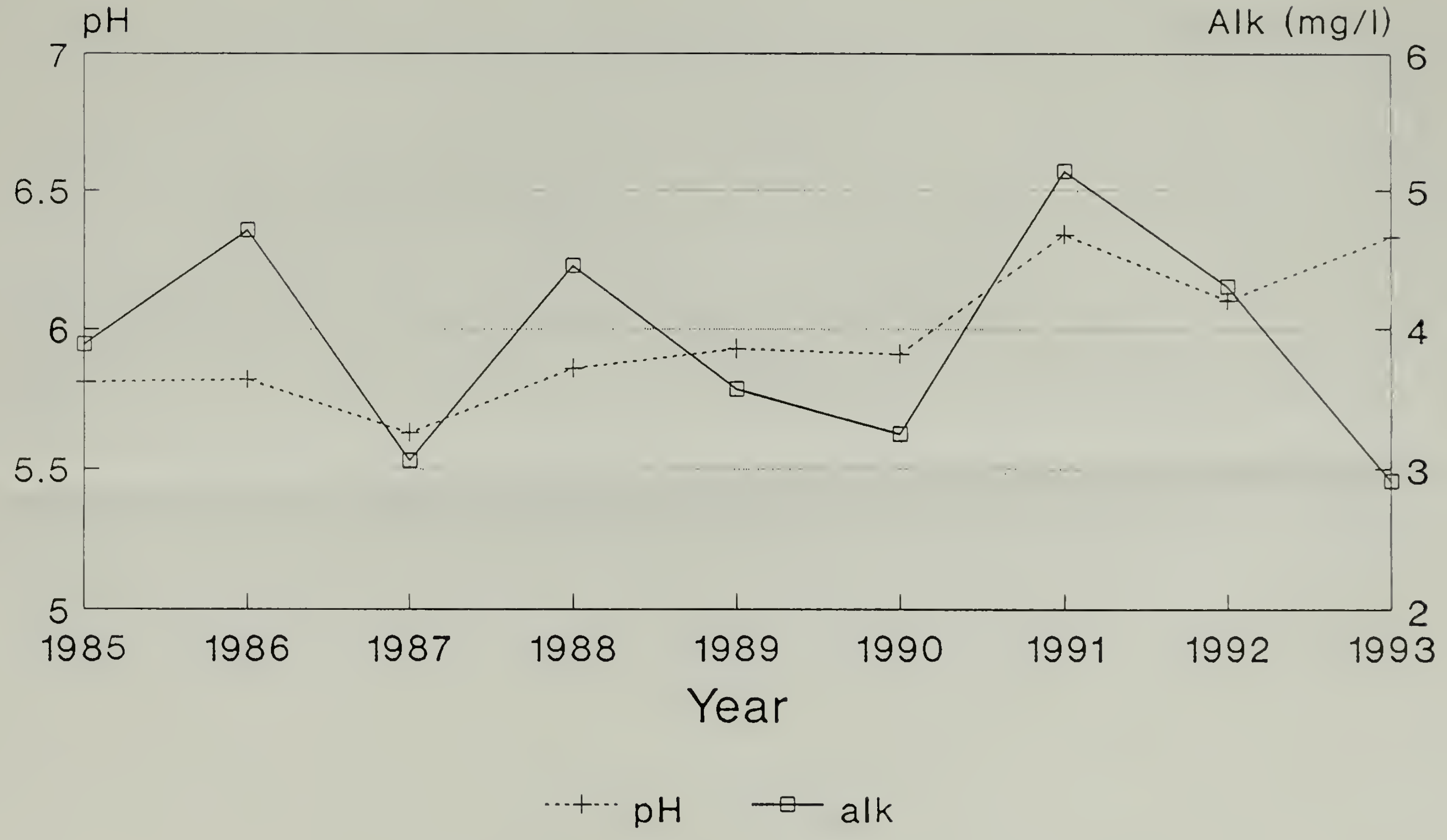
April Trends in pH and Alkalinity
Essex County



April Trends in pH and Alkalinity
Plymouth County



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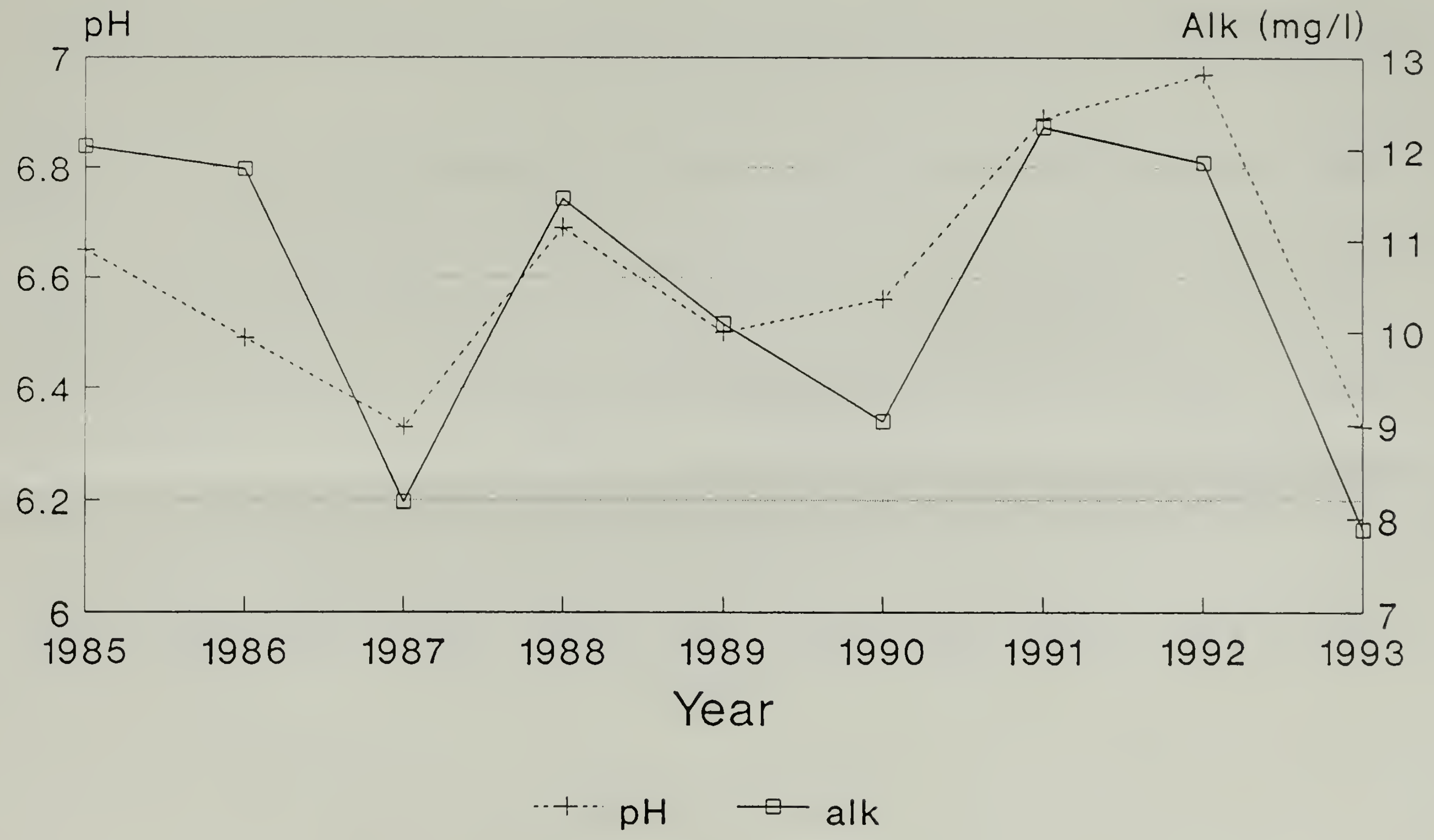
April Trends in pH and Alkalinity

Norfolk County



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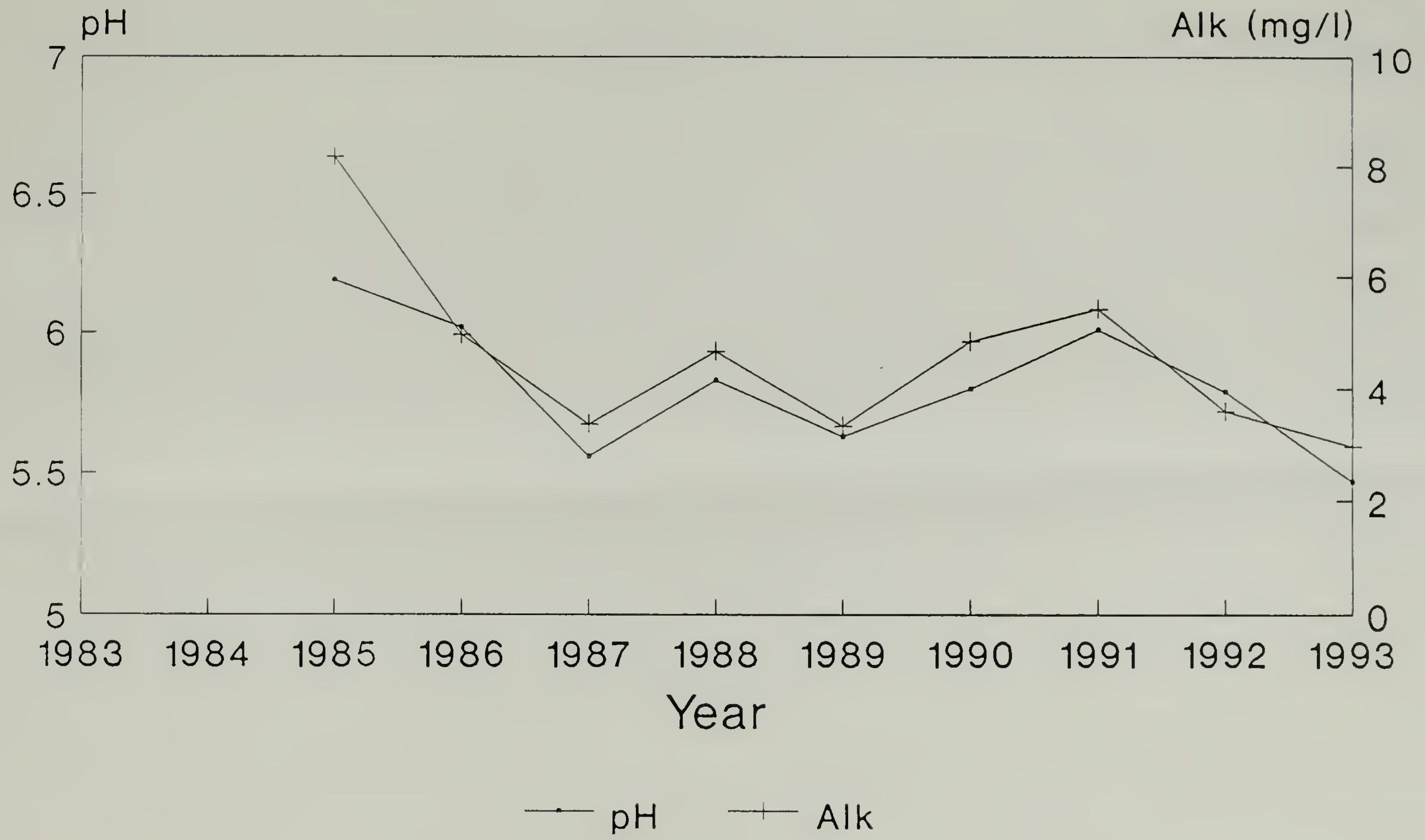
April Trends in pH and Alkalinity

Bristol County



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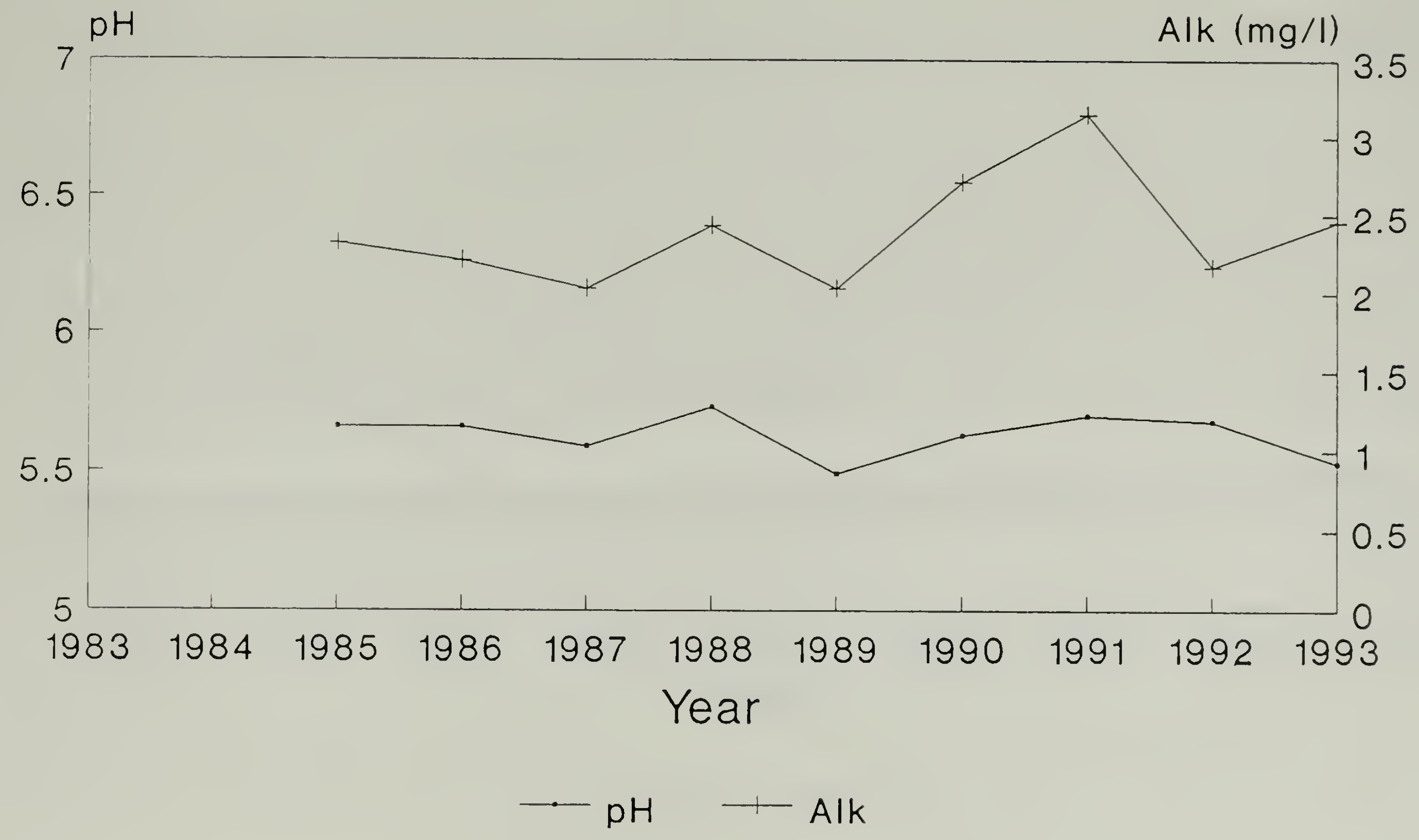
April Trends in pH and Alkalinity

Barnstable County



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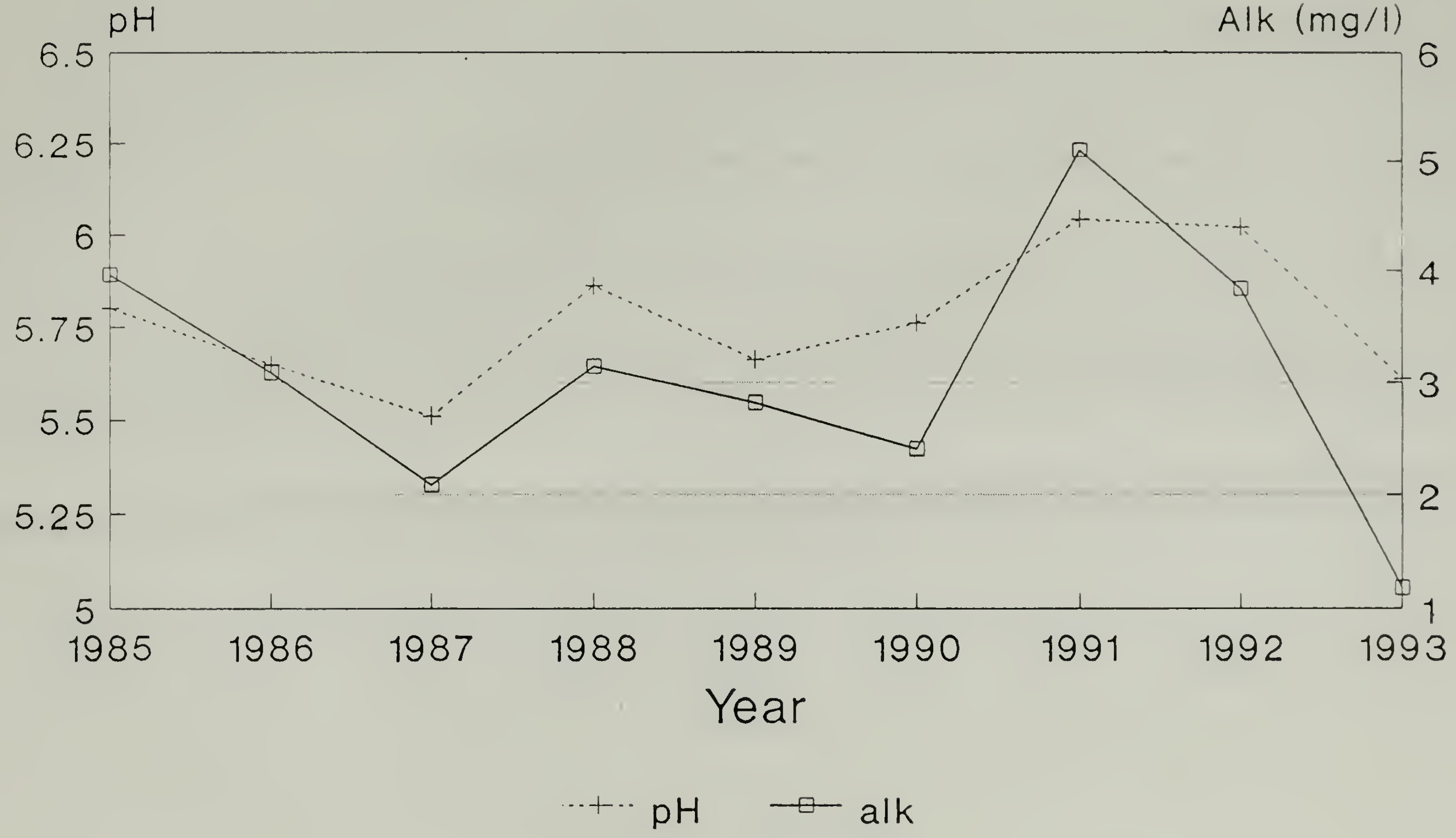
April Trends in pH and Alkalinity

Worcester County North



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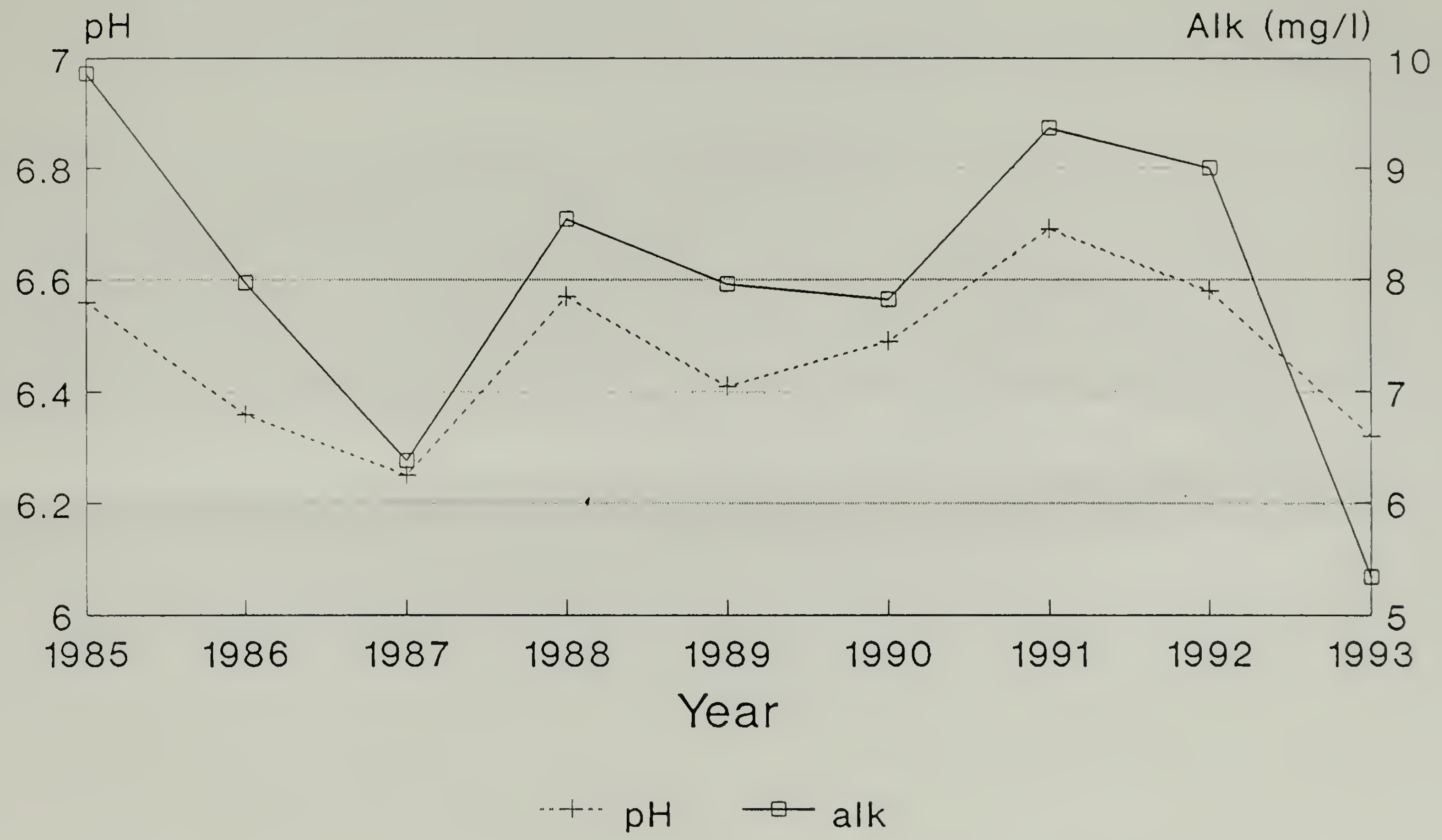
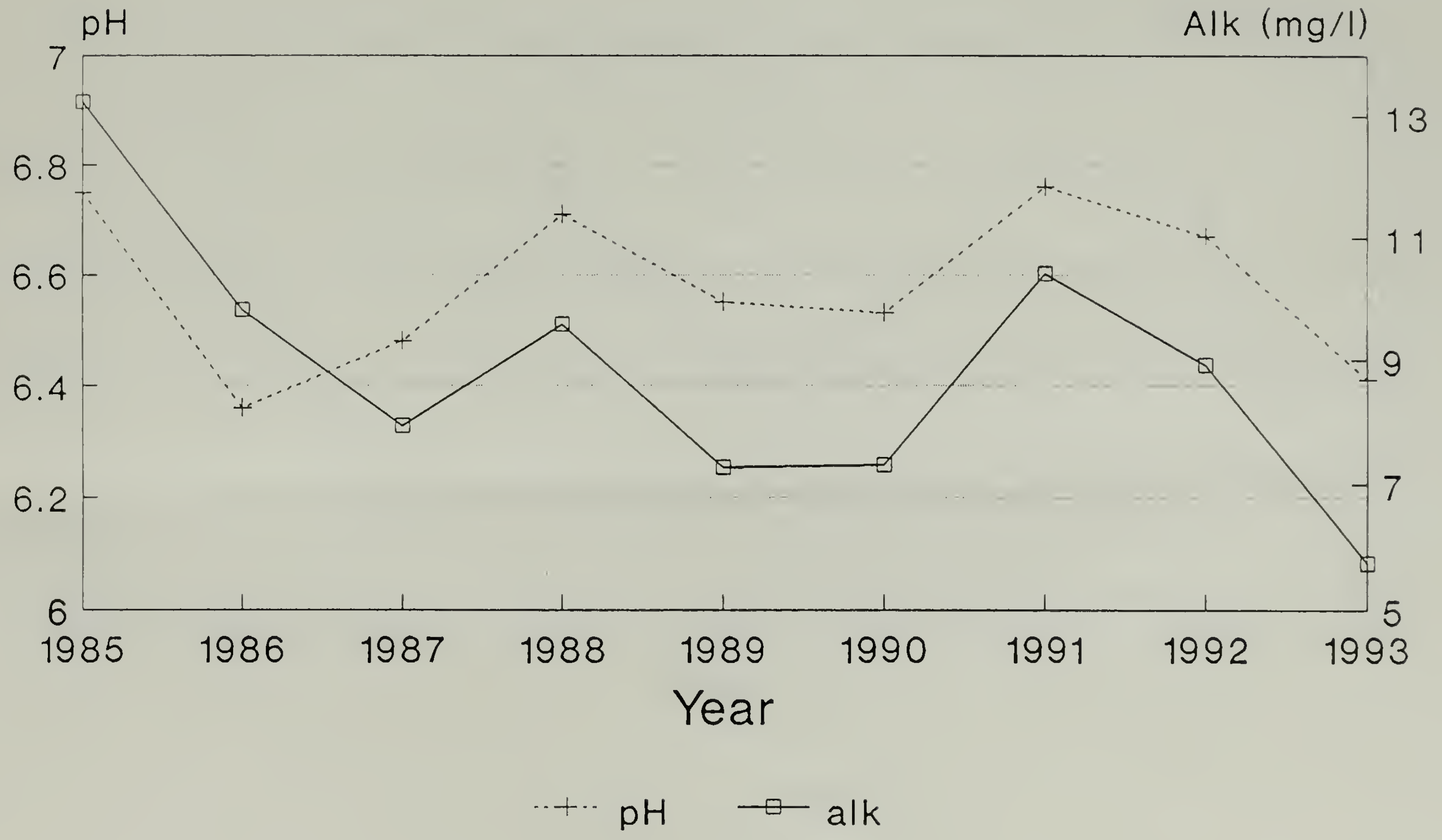
April Trends in pH and Alkalinity

Worcester County South



April Trends in pH and Alkalinity

Hampshire County



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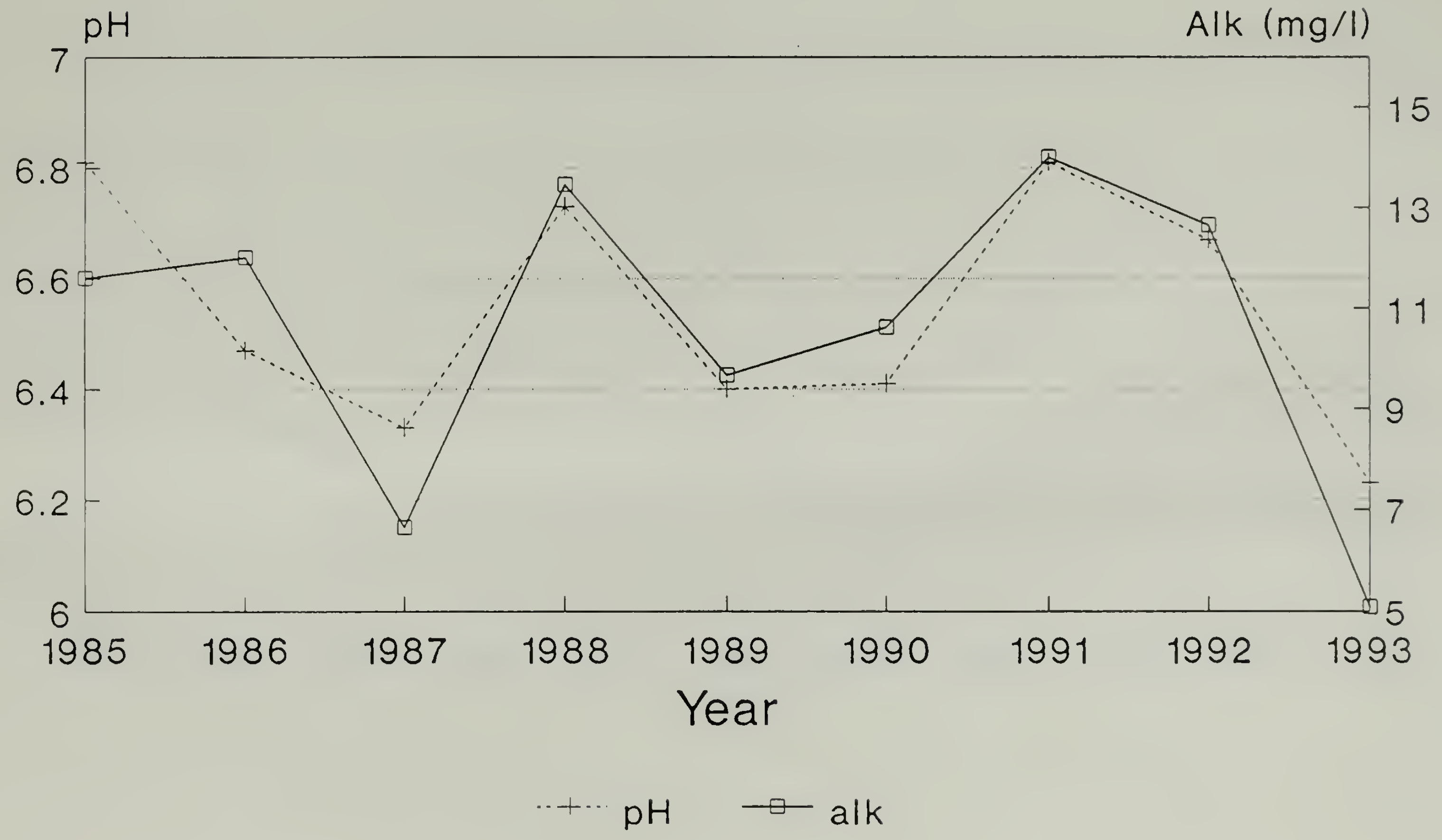
April Trends in pH and Alkalinity

Hampden County



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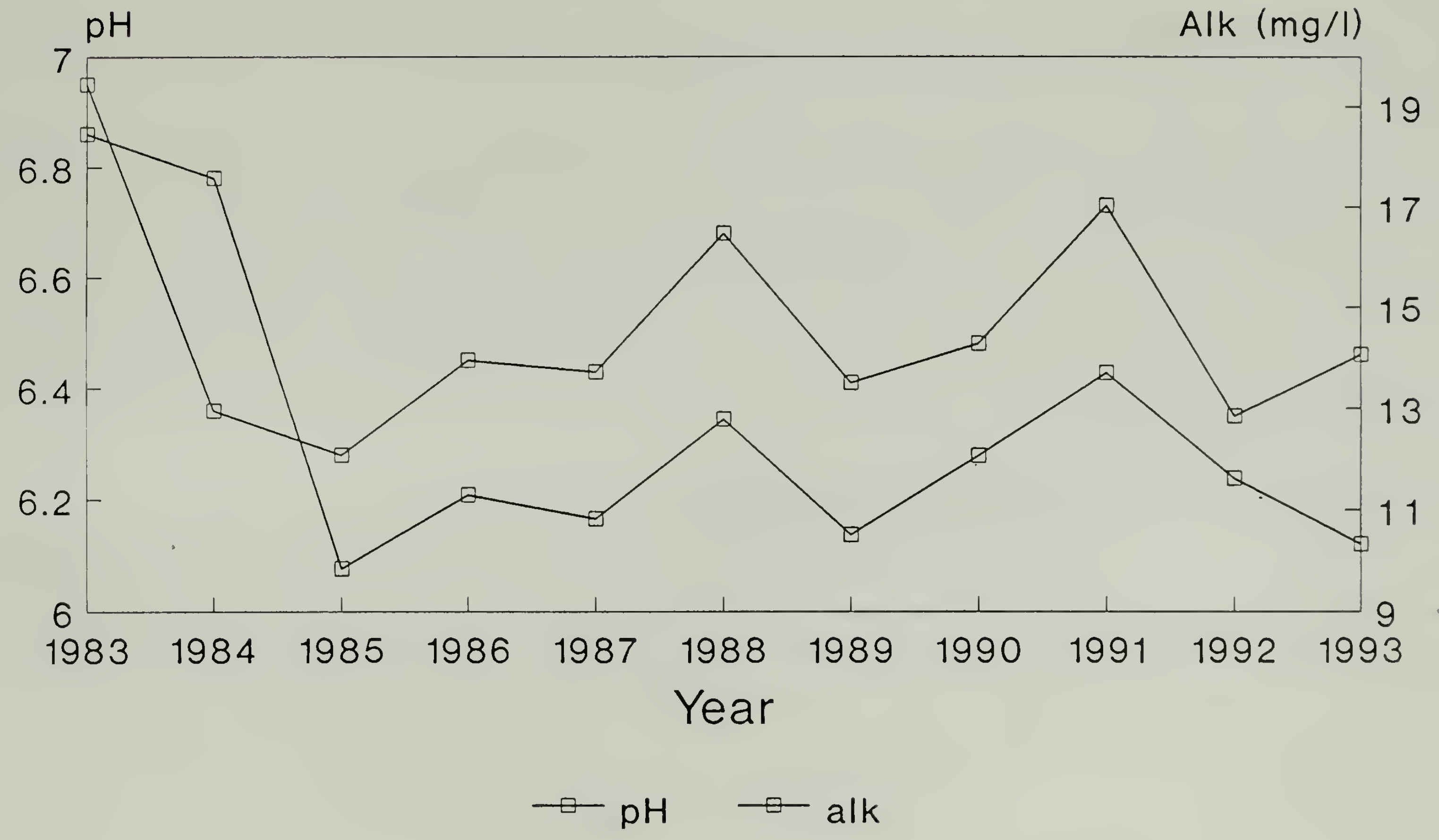
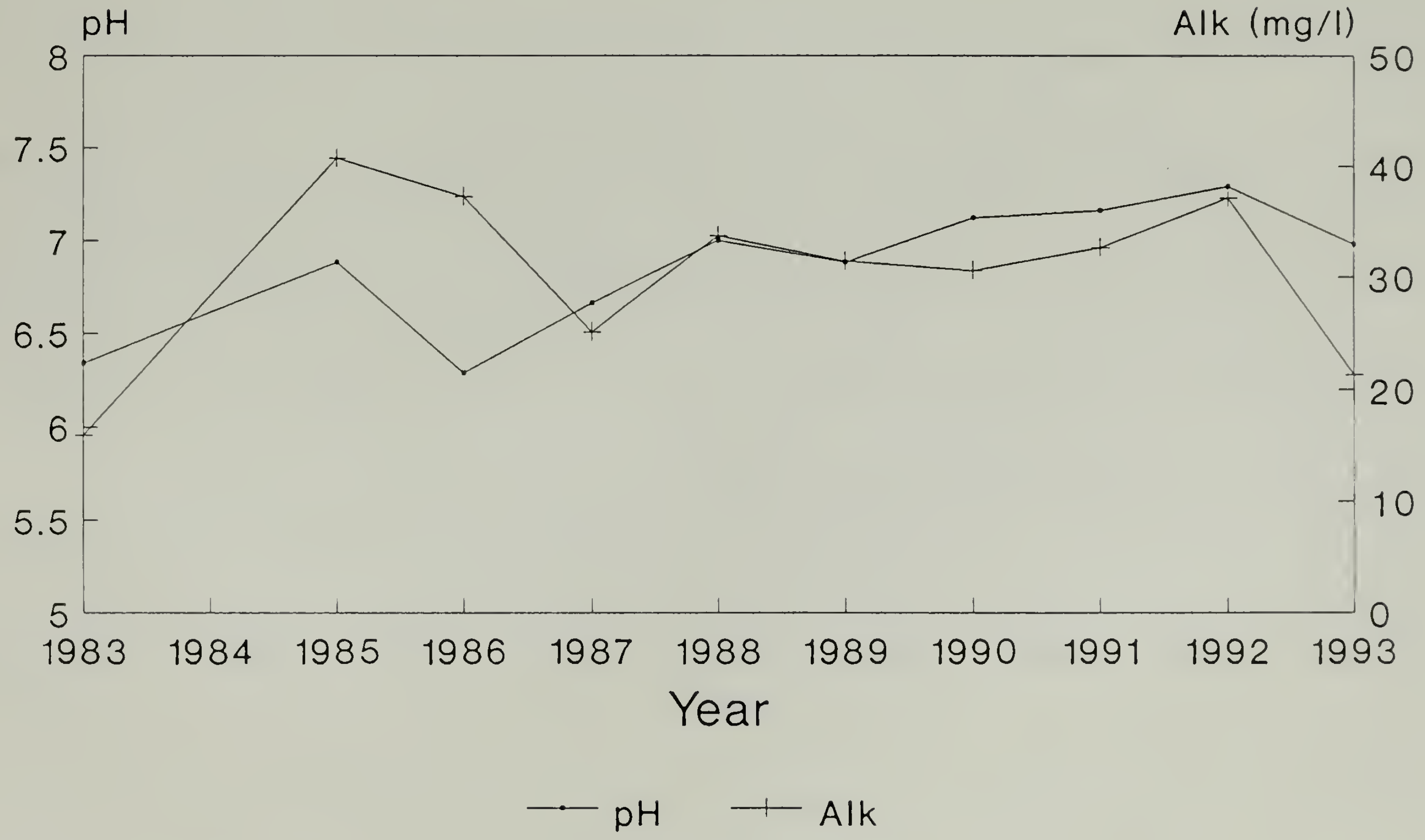
April Trends in pH and Alkalinity

Franklin County



April Trends in pH and Alkalinity

Berkshire County



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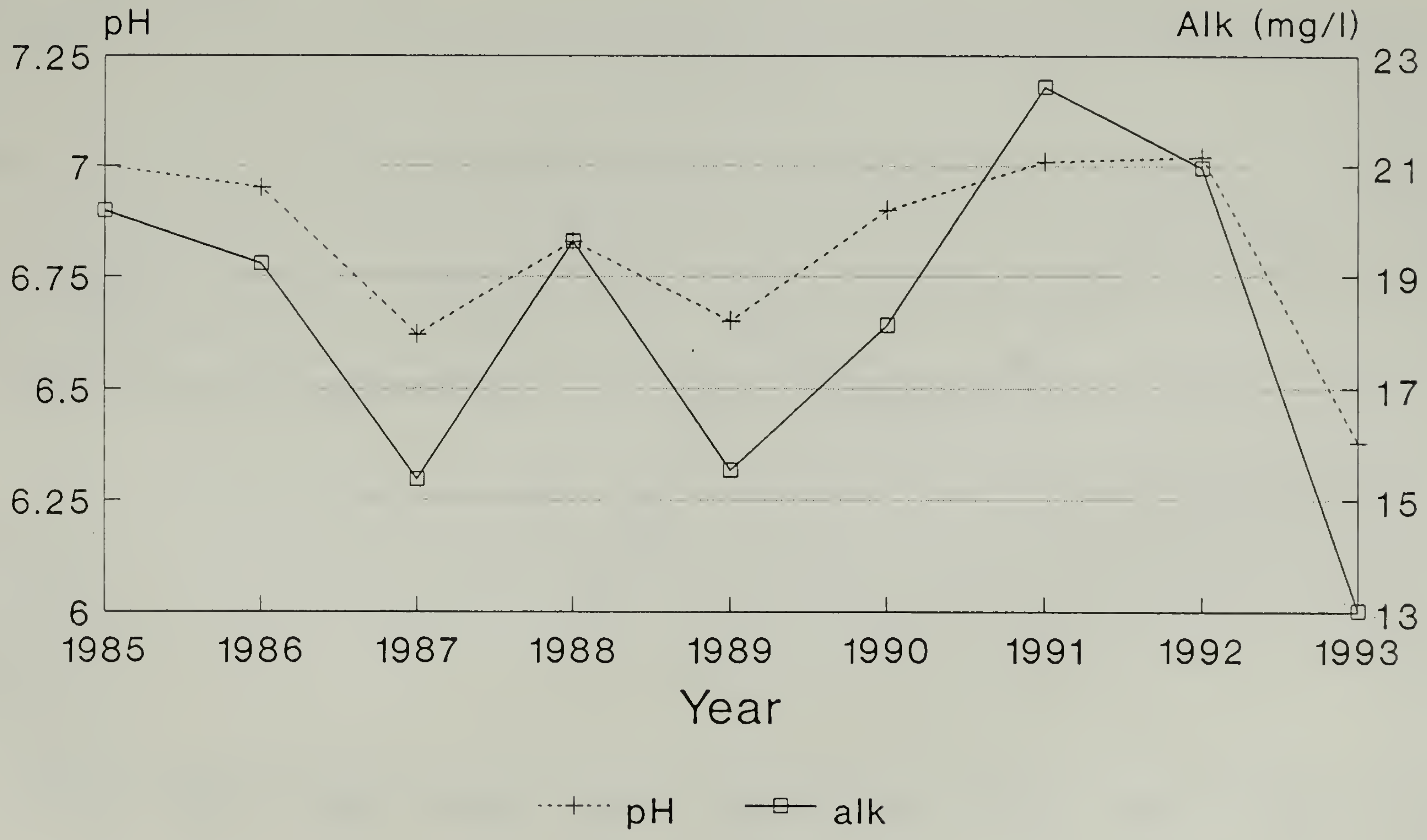
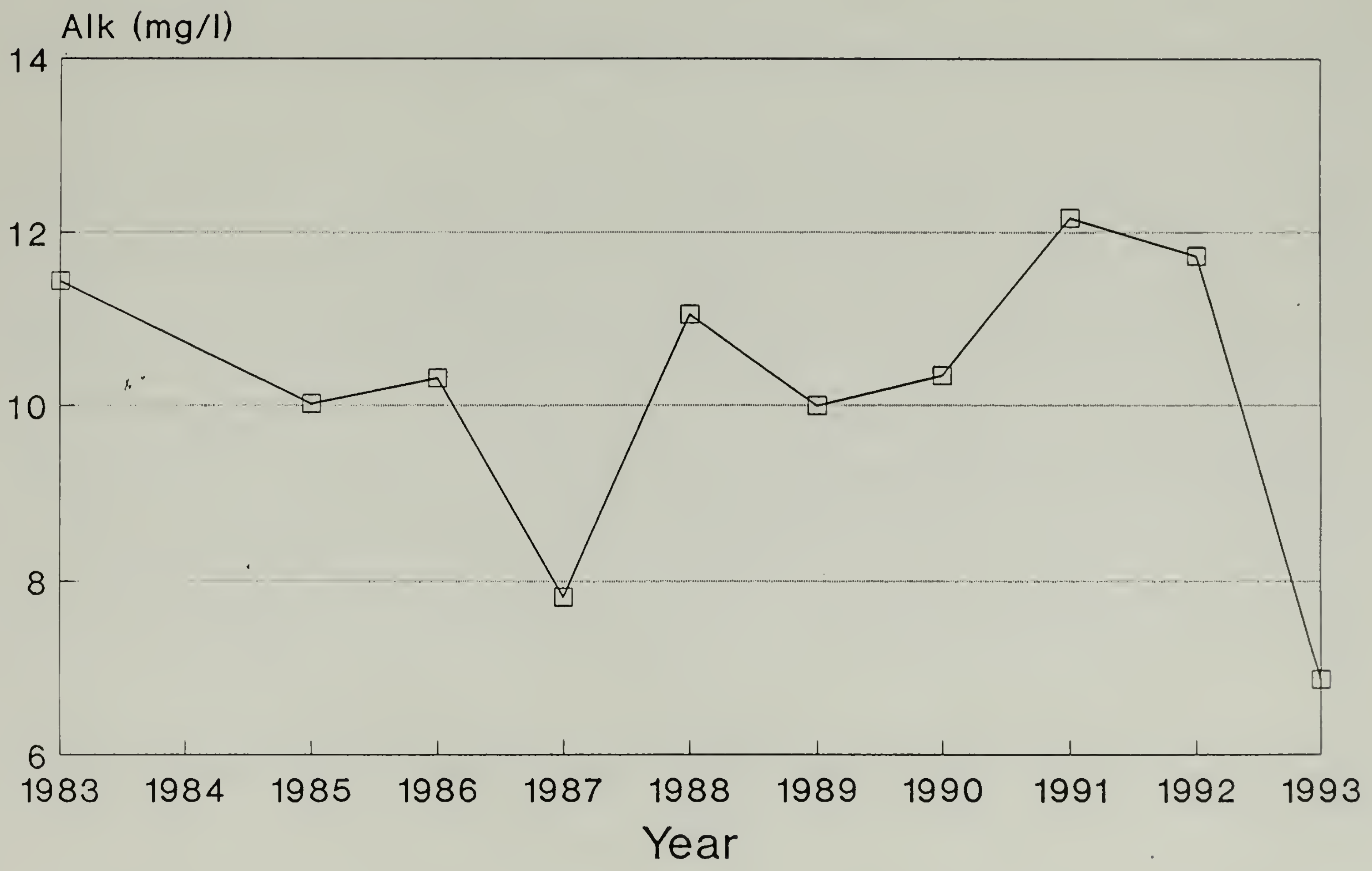
April Trends in pH and Alkalinity

Middlesex County

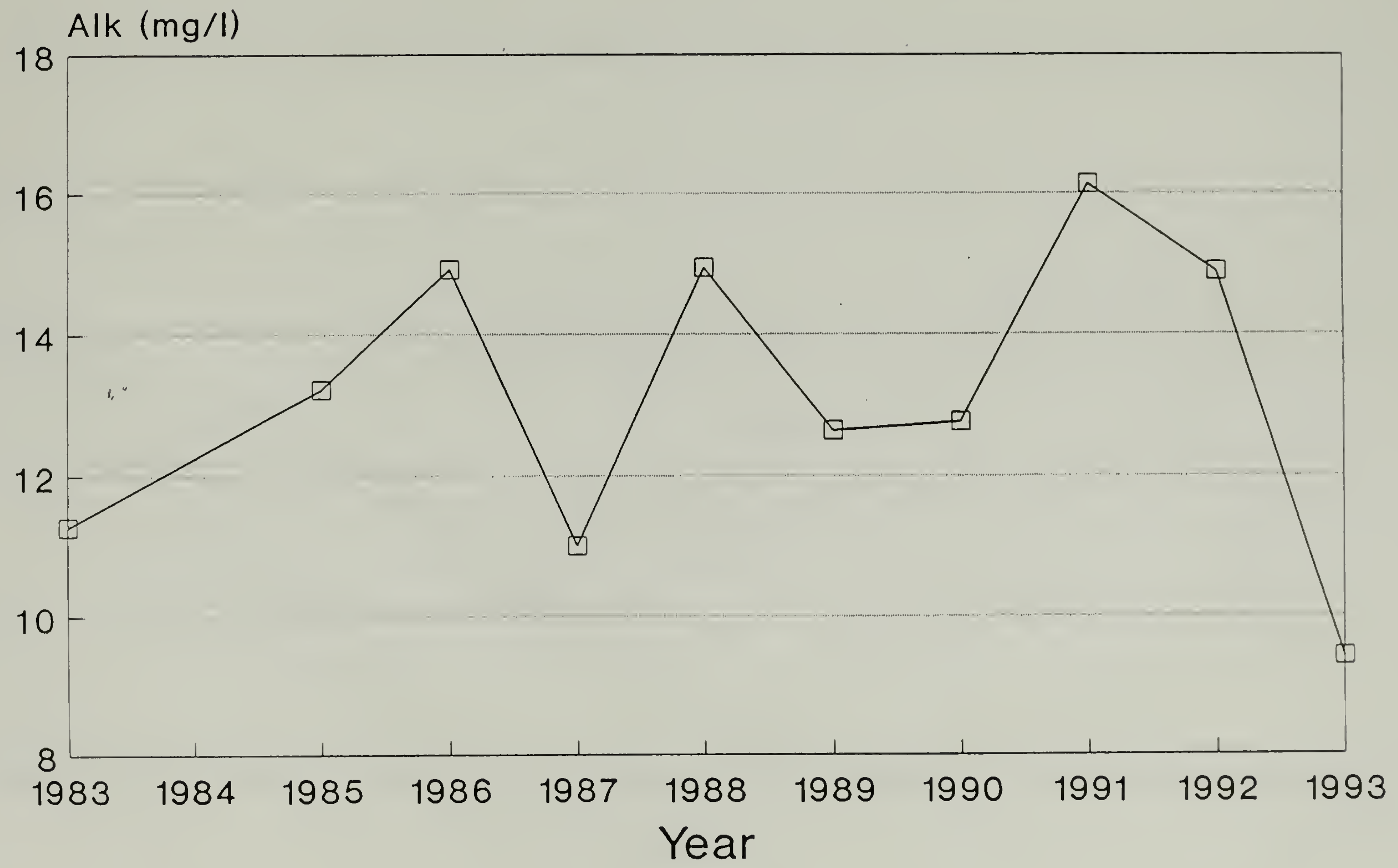


Average for random sites

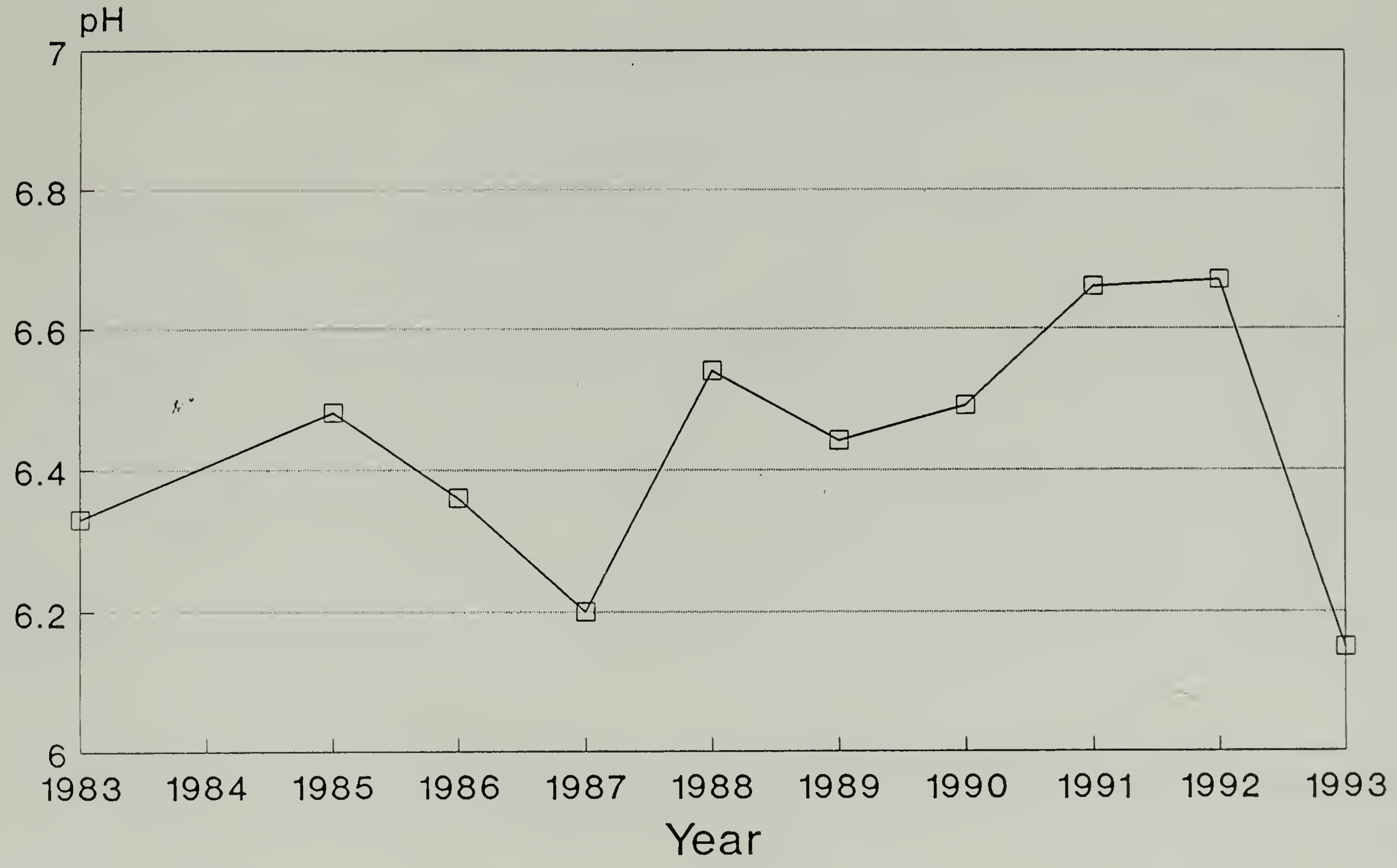
Average weighted Alkalinity in Mass. Lakes 1983-1993 - April



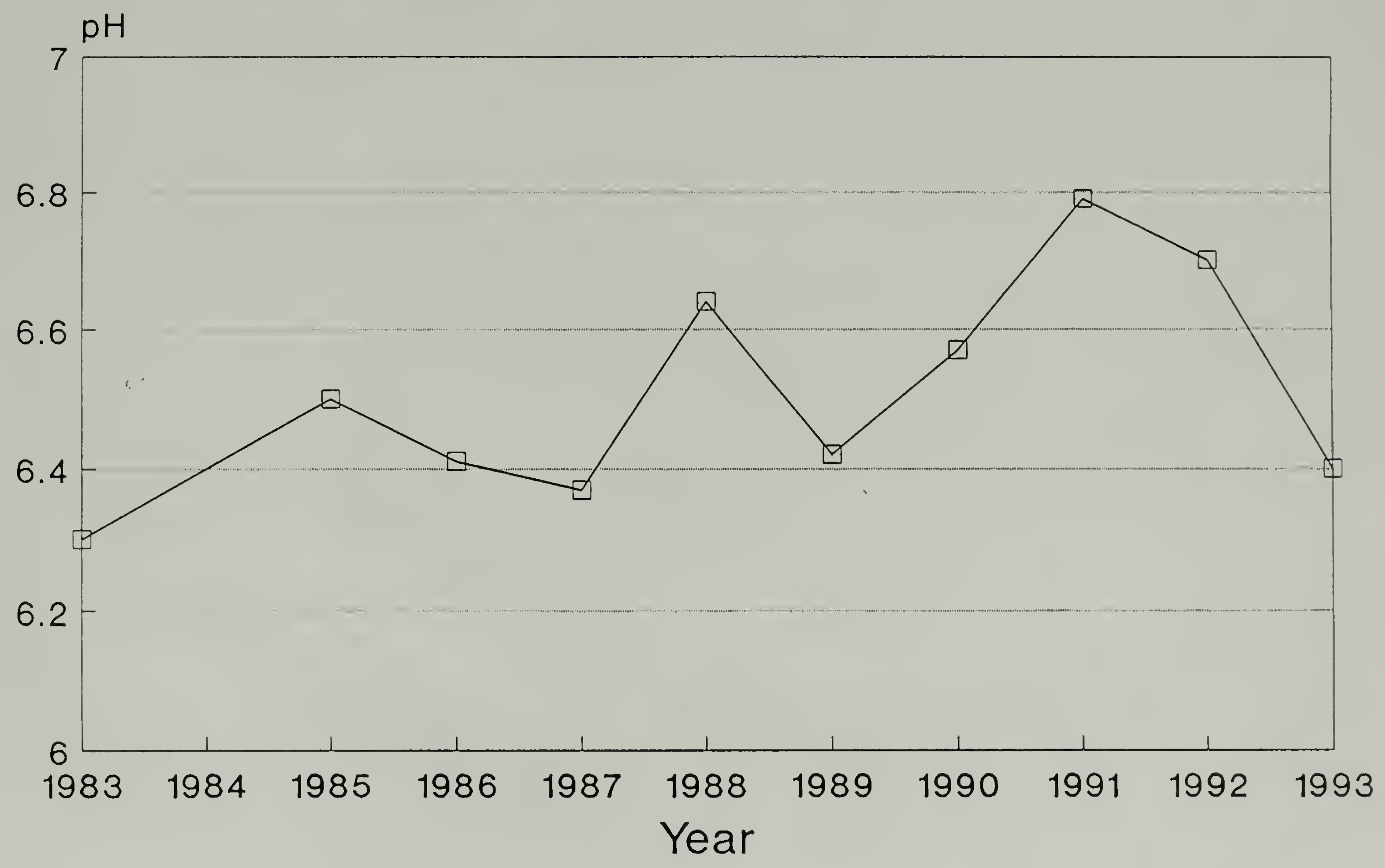
Average weighted Alkalinity in Mass. Streams 1983-1993 - April



Average weighted pH in Massachusetts Lakes 1983-1993 - April



Average weighted pH in Massachusetts Streams 1983-1993 - April



WFCR RADIO PROGRAM TRANSCRIPTION

WFCR's Morning Edition, 4/20/93

Introduction: An internationally acclaimed Acid Rain Monitoring Project at the University of Massachusetts may soon see its funding evaporate. Researchers fear if the money dissipates so will the prospects of finding out the real effects of acid precipitation in Massachusetts. WFCR's Eric Wilkinson reports:

Eric Wilkinson: While rushing waters of the heavy spring thaw bring new life to area ecosystems, a sinister undercurrent runs, threatening to destroy the soils, forests, and fish that depend on waterways for their life blood. In the winter, acid rain becomes acid snow. During the spring thaw, billions of particles of dangerous chemicals inundate rivers, lakes, and streams. Scientists say this spring is a crucial time for the New England environment, not just because of the exceptionally large run-off, but because of a recent decision to stop funding the nation's only long-term study of the effects of acid precipitation.

Dr. Paul Godfrey: The hope is that things are not getting worse and that, in fact, a reduction of the emissions that cause acid rain will begin to improve lakes and streams. But the answer to that is really not very well known.

Eric Wilkinson: In the early 1980's, Dr. Paul Godfrey founded the Acid Rain Monitoring (or ARM) Project at the University of Massachusetts. He has studied some 750 bodies of water throughout the Bay State, tracking the effects of acid rain and snow. Researchers use their data to determine whether the problem is getting better or worse in the Northeast. Moreover, they're finding out if the billions of dollars spent on aggressive clean air reforms in the region are having any effect. Now in the eighth year of a scheduled ten-year study, scientists say they are just beginning to see some results. However, budget cuts may force them to terminate the project at the end of June. Dr. Godfrey says halting their progress now would be a monumental waste.

Dr. Paul Godfrey: We're going to spend 50 billion dollars on emission clean-up over the next ten years as a result of the Clean Air Act, and we're not going to know whether we get our 50 billion dollars worth of results from that unless we have some kind of monitoring study going on.

Eric Wilkinson: The $240,000-a-year study was originally funded through the state's General Fund. In 1988, cutbacks forced the

Massachusetts Division of Fisheries and Wildlife to pick up the tab for the project through hunting and fishing licenses, but the agency says it can no longer support the research, and, reluctant to raise licensing fees, the Division chose to cut the ARM Project. Deputy Director of Fisheries and Wildlife, Jack Buckley, says although funding the study could help the Division in the long run, he has to look at short-term finances.

Jack Buckley: We would maintain it does help us, and that's been clear all along, and that's why we've funded it for the last three years--four years--and almost put a million dollars into it. But, we also feel that it helps a lot of people, and there are perhaps other agencies--federal agencies like the EPA--which would also have an interest in this kind of research, and perhaps it's time that other people pick up the tab.

Eric Wilkinson: Coordinators of the Acid Rain Monitoring project say their study is uniquely cost effective. Water samples are taken by 300 volunteers across the state four times per year. Officials also say that while the ARM study provides unprecedented information about acid deposition in Massachusetts, it may also help on a regional basis. The only other project comparable to the ARM research is done by the Environmental Protection Agency, and the EPA's own researchers concede they are well behind their Massachusetts counterparts. Dr. Joan Baker is a leading EPA scientist studying acid rain in Corvallis, Oregon.

Dr. Joan Baker: The benefits of the Massachusetts state monitoring program is it's more intensive. You can make statements specifically about Massachusetts. You can compare those statements to the regional information that EPA will be producing to determine whether it's consistent or not. And also because the Massachusetts state program was initiated earlier in the 1980's, they presumably will be able to detect trends over time earlier than the EPA program.

Eric Wilkinson: ARM researchers admit, to be truly effective the study would have to be funded through the year 2000, but for now they're hoping to keep it alive just through 1995. Whether the state is willing to provide the half million dollars needed is uncertain, Governor Weld only saying he will take the matter under advisement. Meantime, Dr. Godfrey and his hundreds of volunteers continue monitoring Massachusetts water, hoping their funding doesn't dry up. For WFCR, I'm Eric Wilkinson.